DOCUMENT RESUME

ED 260 255 CE 042 251

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TITLE Review and Synthesis of Research and Development on Career Education Infusion in the Secondary Classroom 1976-1981.
PUB DATE 15 Sep 85
NOTE 21p.
PUB TYPE Information Analyses (070)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Achievement; Accountability; *Career Education; Demonstration Programs; Education Work Relationship; *Fused Curriculum; *Interdisciplinary Approach; Models; *Program Effectiveness; Program Evaluation; Program Implementation; Relevance (Education); Research Methodology; Research Problems; Secondary Education; Student Motivation; *Teacher Role

ABSTRACT

Curriculum planners and career educators are advised to review the literature on infusion with this question in mind: "Does the integration of career education into the regular secondary classroom make a difference in student learning of subject matter and career information?" The philosophy and objectives of career education infusion were described in four monographs. Hoyt (1976), Preli (1978), and Ristau (1976) stressed the importance of using career education in the classroom to improve students' achievement and motivation. They also found that inservice is necessary to help teachers integrate career education into regular classroom instruction. Suhor (1979) theorized that methods of instruction depend on the district's approach; a district-wide program was instrumental to successful programs. Recent legislation has provided financial support to local school districts for developing career education programs. Congressional hearings supporting the Elementary and Secondary Education Act of 1977 indicated that infusion of career education into the regular classroom resulted in growth in decision-making skills and school-work relationships. Research reports consisted of a variety of methods including surveys, pre- and post-tests, and comparative studies between experimental and control groups using psychometric measures. Three researchers (Bhaerman 1979; Herr 1977; and Wilson 1977) concluded that students exposed to career education infusion had better achievement records than students with no infusion programs. Others, however, noted problems. The following areas need further research: program evaluation, teacher training, and instruction. (KC)

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REVIEW AND SYNTHESIS OF RESEARCH AND DEVELOPMENT

ON

CAREER EDUCATION INFUSION IN THE SECONDARY CLASSROOM

1976 - 1981

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Introduction

The purpose of this review of research and development on career education infusion is to survey the literature on programs that integrate career education into the regular secondary classroom. The search spans 6 years, 1976-1981, years in which career education has become a prominent issue in the schools. Some materials are not strictly investigative, but could be fundamental in planning research or school programs on career education infusion. Curriculum coordinators, guidance counselors and teachers should find this paper useful for program development in career education. For researchers, the paper should prove helpful in evaluating current research on the subject and in planning further research on effectiveness of career infusion programs on the high school level.

The source for this review was Resources in Education, subject index descriptors career education and secondary schools. Sub-descriptors used with these major descriptors included fused curriculum, teacher role, interdisciplinary approach, relevance (education), program implementation, educational accountability, and education work relationship. The reports are available on microfiche, in journals and in school program guides.

The studies reviewed in this paper cover four areas that describe career education infusion in high school programs.

The areas include philosophy and objectives concerned with theory, legislation supporting the infusion method, research reports, evaluation program results and program models presenting examples of recent infusion programs. The studies seem representative of the research in the area of career education infusion and can be used by the reader as a key to planning career education programs in secondary schools.

Although the research and development reported pertains primarily to high school curricula, many of the reports also contained K-12 curricula. The philosophy of integrating career education into the district curriculum, in order to relate all education to future work, seems to be the underlying theme of the reviews.

The paper also contains an overview of issues on the topic, followed by an analysis of the materials reviewed. The summary contains review findings and suggestions for further research. The bibliography should prove useful to the reader who may want to secure the sources for further study.

Issues and Definitions

A major issue in career infusion is whether career education itself is necessary in the schools. A most important challenge to the high school student is to realize that he needs to prepare for entry into the labor market. Harris and Grede (1977) note one very serious problem in career choice - the mismatch between student aspiration and ability. The authors suggest realistic educational advisement to help students assess their abilities as they move through required and

elective subjects. Federal legislation has provided funding for state and local career education programs. The Elementary and Secondary Career Education Act of 1977 cites career education as one of its goals. It states that:

> In recognition of the prime importance of work in our society, and in recognition of the role that schools play in the lives of all Americans, it is the purpose of this act to assist states and local education agencies in making education as pre- preparation for work a major goal of all who teach and all who learn by increasing the emphasis they place in elementary and secondary schools on career awareness, exploration, decision making and planning. (p.2)

The nation's present economic problems and its resultant unemployment, have spurred interest in helping students prepare for careers while in school. As early as 1976(c), Hoyt foresaw the need for career education as a necessity in a time of high technology and demand for skilled and middle manpower labor. Hoyt felt that educators cannot just lock up the classroom and keep students away from the real world.

An issue that underlies career education curriculum development is whether to infuse career education into the existing curriculum or add on a separate course. Reinhart (1979, p. 79) supports infusion as a process in career education that "...introduces selected elements into the existing curriculum in such a fashion that the curriculum continues to fulfill its intended purpose but with a new focus, a new emphasis and, it is hoped, a new meaning for the student." Carpenter (1981) describes how the debate between liberal arts and vocational education has moderated in recent years as career educators have stressed that both areas can combine to serve students in making career choices. This cooperation shows flexibility in outlooks and skills for career development. In providing a model for classroom teachers, Mitchell (1979) asks teachers to integrate the

notion of making money (which all students will eventually have to do) with school subject matter. The sooner students are able to see themselves in a career development process, the sooner their present education will have more meaning.

The need for career education and the application of the infusion method leads to the definition of career infusion on which this paper is based. The definition stems from Hoyt's (1976b, p.4) models in which infusion is used "...to represent attempts within the formal system of education to make education as preparation for work, both a prominent and permanent goal of all who teach and all who learn." The "formal system" in infusion is the regular classroom curriculum, which makes the classroom teacher an important factor in the infusion process.

Analysis of Reviews

An analysis of the reports reviewed indicated that 15% were based on surveys, 15% on opinions, 15% on legislation, 35% on statistical reports and 20% on program models. Surveys presented data collected by questionnaires, interviews and on-site visits. Opinions were expressed in monographs by authors experienced in the infusion process. Legislation reviews studied federal and state laws that have supported and funded career infusion in secondary schools. Statistical reports provided measurable results of data gained in meeting the objectives of studies on career infusion. Program models described examples of career infusion in the secondary classroom.

Philosophies and Objectives

Hoyt (1976a) reported the thoughts and activities of 49 teachers participating in four career education miniconferences at the Center for Vocational Education, Ohio State University. The topics included two areas concerning classroom infusion: 1) career education and instruction; 2) career education and the classroom teacher. The participants felt that relating careers to subject matter improved academic achievement. Since many teachers did not feel familiar with the career education process and objected to the time needed to infuse the program into the curriculum, inservice instruction was considered a priority in developing an infusion program.

The teaching/learning process as the primary delivery system for career education was presented in a monograph by Preli (1978). By analyzing stated learner outcomes and existing programs in school districts, Preli made it apparent that the delivery of career education is the responsibility of the total instructional staff. Key messages conveyed by the author included (1) the importance of instructional content; 2) the placement of career education into the curriculum to motivate students to learn subject matter; 3) the time needed to develop materials for infusion into the teaching/learning process; 4) the need for administrative support 5) the accountability of classroom teachers for infusion of career education into the curriculum as part of a teacher's regular responsibilities. Ristau (1976) listed the needs of high school teachers and students in planning a career education program. After reviewing high school career education programs, the author discussed the need to look at every student as having a career goal and as needing help with career

planning. Where infusion is the approach to curriculum development, he stated that faculty members need to be committed to spontaneous classroom activities to incorporate career education into regular classroom instruction. Inservice instruction was suggested to help develop this commitment.

Suhor (1979) developed a concept of how career education goals relate to those in subject matter. Some are congruent where subject matter skills have broad career values. Some overlap where career education is a natural extension of the subject. Others are distinctive in which mastery of skills in a career unit is constructed. Choice of method depends on the district's approach in curriculum development.

Legislation

In order to appropriate implementation of monies for the infusion of career education concepts into the existing curriculum of the nation's schools, the Elementary and Secondary Career Education Act of 1977 assisted local education agencies in making education as preparation for work a major goal. Statements by federal, state and local educational representatives were presented during five days of hearings. These statements included research supporting learner outcomes for career education, understanding the relationship of education to career opportunities, and utilizing career oriented test batteries to evaluate infusion programs. Conclusions indicated that infusion of career education into the curricula resulted in significant growth in decision making skills, awareness of the importance of education and familiarity with the nature of jobs.

An evaluation of state and local-level implementation of the Career Education Incentive Act was conducted by Steel (1980) through sight visits in nine states. The visits evaluated staff and curriculum development efforts aimed at infusing career education into the K-12 curriculum. Fifty-eight percent of the teachers visited were estimated to be using a career emphasis regularly in their teaching. Seventy percent of the counselors were reported to be actively supporting career education implementation. Eighty-five percent of the respondents indicated that PL 95-207 funds had contributed to these significant percentages. Areas needing further attention were found to be preservice training and involvement of groups representing special needs populations.

The New Jersey Department of Education (Burke, 1980, p. 11) requires high school students to take "One-half credit year of career exploration or development" as a graduation requirement beginning with the class of 1985. The requirement can be fulfilled by a single career education course, by infusion of career education into regular classrooms or by specific vocational education programs or course equivalents.

Research Reports

Bhaerman's (1979) review of career education research, intended for the classroom teacher, is based on Herr's review and synthesis which follows. Major findings by Bhaerman cited the importance of research involved in the development and implementation of career infusion in the regular classroom. Comparative studies between experimental and control groups using psychometric measures revealed that students exposed to career education infusion performed as well as or better in academic achievement and attendance than students in traditional classes. However, career education research has not yet developed a clear picture of long term effects on the attitudes and skills of students involved in infused career education programs. The results of this study can be used as a basis for further research on the problems in developing infusion programs and on the performance of students in such programs.

A review and synthesis on career education conducted by Herr (1977), reported that many of the paper's finding came from evaluation studies or final project reports rather than clearly defined research. National surveys of teachers and counselors noted the importance of including career education in the curriculum. Teachers in grades five through twelve expressed a need for more emphasis on integrating career education into the regular classroom. Many teachers reported inservice to be invaluable in developing classroom infusion programs.

In comparing the psychometric results and goal attainment of experimental and control groups, Herr found that students in infused programs fared better in academic subjects than students with no programs. However, in using pre- and post-tests for evaluating career

education programs, significant differences were not discovered. In the absence of a standard assessment of programs, it was difficult to account for the variance in outcomes reported. Herr's study covers a wide variety of programs and should be very helpful in citing available research on infusion programs.

Selz (1980) conducted a study to assess the competencies for employability and to determine where these skills should be learned. National surveys of the general adult public, public school teachers, high school seniors and employers were conducted. Competencies dealing with traditional job values and expectancies were perceived by the groups as being predominantly the responsibility of the home. Competencies relating to job advancement were perceived to be primarily the responsibility of the work place. The teaching of active worker behavior concerning taking charge of oneself and getting ahead were assigned to the work place and school. Further study was suggested to investigate the relationship of basic skills both to the attainment of employability skills and to evaluate success in the job market.

Walker and Meader (1980) conducted a study to analyze the cognitive and affective effects influencing hard sell (career education course) and soft sell (infusion) career education programs for hearing impaired students. Student cognitive gains were measured on pre- and post tests designed for each program. Teacher attitudes were surveyed with a questionnaire. The tests showed a slight increase in mean post test scores for both programs, but teacher attitudes indicated a preference for hard-sell programs. Having no statistically significant student gains in career knowledge, soft sell programs were found

to need teachers who accept the ideas and who have materials for implementing the programs.

In a review of research on the current status of career education, Wilson (1977) found professional attitudes to be positive. Most of the research concentrated on career education's effectiveness on academic achievement. Career education infusion was especially influential to basic skill performance. Motivation for learning was related to success of teachers and students in career education programs. Problems in developing integrated career education programs with all educational programs in the school district were presented to give the user the opportunity to forsee the planning needed for successful programs.

Career Infusion Models

Barham (1980) conducted an evaluation of a career education infusion program to determine the relationship of school subjects to future careers. Pre- and post-career awareness tests and subject achievement tests, constructed by teachers to cover their units and specific careers mentioned therein, were administered to high school students in Richmond, Virginia. Data analysis, student comments and teacher observation showed that students do achieve and are motivated to continue to learn through the career awareness approach in the classroom. This pilot study demonstrates that this career awareness approach is a possible educational method which is effective and has benefits for student, teacher and community.

Career Education Programs That Work described high school infusion in three curricula that were evaluated for their effectiveness.

The Career Development Program in Akron, Ohio used a third party test to measure student growth on cognitive and effective items. It was determined that program students learned significantly more than non-program students. The Pima County Career Development Career Guidance Project in Tucson, Arizona used a "Career Test" on students with both high and low participation in the program. All comparisons at every grade level favored the high exposure students in the program. Project CERES, in Ceres, California used case study descriptions and pre- and post-tests on treatment and control groups to determine the effectiveness of the program. The growth of treatment group students was determined to be statistically significant. This study closely reflected career education goals and objectives for classroom infusion and provides the reader with programs that can be integrated into the regular high school classroom.

In An Exemplary Career Education Program in the Great Falls Public Schools (1977) an evaluation of the first year of a project to expand and improve existing career education project components was conducted. Evaluation data were obtained from standardized tests, locally developed instruments and recorded data. The findings on integrating Experienced Based Career Education strategies into a career exploration unit nestled within an existing course demonstrated success in meeting its goals. Baselines were established for assessing future projects in basic skills and career decision making. Program coordinators may benefit from this evaluation because problems on staff expertise in curriculum integration and strained resources in manpower are noted and strategies for improvement are suggested.

Raymond (1980) reported a study which examines the concept of career education as it has been presented in selected junior high school curriculum guides. The purpose of this report was to review materials in which the infusion approach in career education was utilized. The report examined the congruence of outcomes and activities in the guides with career development stages. The author searched for instructional objectives which were measurable and observable, but found that much more research needs to be done to answer the major question of whether career education makes a difference in student learning.

Taylor (1979) studied ten mathematics infused career education programs provided by the American Institute of Research. The projects were chosen on the basis of their effectiveness as judged by the AIR evaluation committees on exemplary career education programs. Each report contained grade levels involved, the types of districts, the cost of implementation and the level of success. On the basis of these projects, it was concluded that infusion is superior to "add-on" programs. It was also apparent that several subjects in the curriculum could better achieve career education goals than single subjects. Parents, community, teacher inservice and instructional materials were important considerations for implementation of infused programs. Reports also noted that the learning of math was enhanced by career education.

Summary

The major question that curriculum planners and career educators should ask when reviewing the literature on infusion is "Does the integration of career education into the regular secondary classroom make a difference in student learning or subject matter and career information?" The results of research and development described in each review on infusion are summarized below.

The philosophy and objectives of career education infusion were described in four monographs. Hoyt (1976), Preli (1987) and Ristau (1976) stressed the importance of using career education in the classroom to improve students' academic achievement and motivation. They also found that inservice is necessary to help teachers understand the goals of career education and to intergrate career education and to intergrate career goals into regular classroom instruction. Suhor (1979) theorized that methods of instruction depend on the district's total approach to curriculum development. In the opinion of these authors, on teacher using classroom infusion is not enough to produce an effective career education program. A district-wide program with administrative support was instrumental to successful programs.

Recent legislation has provided financial support and encouragement to local school districts in developing career education programs. Congressional hearings supporting the Elementary and Secondary Education Act of 1977 indicated that infusion of career education into the regular classroom resulted in growth in decision making skills and

school work relationships. Steel (1980) noted that the Career Education Incentive Act stimulated classroom teachers to emphasize career education regularly in teaching. Weakness were said to exist in teacher training and consideration of special needs students. The New Jersey Department of Education(Burke, 1980) requires a senester of career education for high school graduation. The above legislation suports infusion strategiesas one way fo fulfilling career education goals in school programs.

Research reports consisted of a variety of methods including surveys, pre- and post-test and comparative studies between experimental and control groups using psychometric measures. Bhaerman (1979), Herr (1977) and Wilson (1977) conclude that students exposed to career education infusion had better achievement records than students with no infusion programs. Selz (1980) found that self assessment and career advancement were the responsibility of the work place and the school. He suggested further investigation of the relationship of basic skills to job skills and job success. Walker and Maeder (1980) related successful career infusion programs to teacher attitude and administrative support. These authors believe that infusion programs can meet career education goals provided that teachers are trained and provided with the proper materials.

Evaluation of career infusion models was accomplished by various methods including pre- and post-tests on career awareness and subject matter achievement tests on treatment and central groups. Burham (1980), Taylor (1979), Career Education Programs That Work (1978) demonstrated career infusion models in which high school students achieved better, were more motivated, and achieved their career education goals within the regular classroom. However, problems on staff expertise and program planning were also noted by the Great Falls Public Schools. Raymond (1980) was unable to find statistically

significant research to answer the question of whether career education makes a difference in student learning.

Most of the studies reviewed for this paper depended on surveys, opinions and teacher-made and standardized tests. Scientific observation for collecting data, is essential and should be conducted in the research reports studying program evaluation of career infusion programs in the secondary school. Wilson (1977) expressed the need for a more systematic evaluation, including longitudinal studies, better suited instruments and traditional evaluative criteria. Effects of teacher inservice must also be studied. As Bhaerman (1979, p.19) noted, classroom teachers are "truly at the heart of the Career education process." In Career Education Update, Marland (1976) supported infusion of occupational relatedness in all curricula. The former U.S. Commissioner of Education also stressed the importance of evaluation of such programs:

> We must assess the outcomes of career education and document evidence that where career education has been systematically installed, the academic growth of young people, including those in college, improves dramatically with intrinsic motivation deriving from the learner's own reasoned application to the learning task. Most of us have been too busy implementing career education to take the pains to document for others the measurable gains. (p.15)

On the basis of the studies in this paper, this reviewer believes the following areas need further research. These research priorities depend on each other for meeting the goals of career education programs. This interdependence makes the order of priority insignificant.

PROGRAM EVALUATION

Standard assessment procedures must be utilized to secure statistically significant results on the effects of infused programs. In addition, longitudinal studies would help researchers develop a clear picture of the long term effects on work attitudes and skills of persons involved in career infusion programs.

TEACHER TRAINING

Teacher needs in developing and implementing programs must be surveyed so that these important people in classroom programs would have the necessary assistance in meeting career education goals. Factors to be considered in evaluation training programs are teacher understanding of career education goals, expertise in curriculum development and information of positive teacher attitudes towards being accountable for meeting student career education needs.

INSTRUCTION

Infused programs should be district wide and should receive administrative support in funding and time allotted for teacher planning. Programs and materials should be examined to assure correlation between subjects and grade levels. High school programs should build on elementary programs. The special needs of classified students and minorities should be considered.

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